

10/606,514

REMARKS

Claims 1-36 are pending in the application. In response to the office action, applicants propose to amend Fig. 1. Claims 1-36 remain pending for reconsideration.

Applicants note the comments in the office action with respect to references mentioned on page 2, paragraph 4 of the present specification. An Information Disclosure Statement will be submitted by mail shortly hereafter.

Applicants note the comments in the office action with respect to the preferred content of an abstract and the preferred arrangement of the specification. Applicants submit that the present specification is in proper form.

The drawings were objected because of a request to label Fig. 1 as --Prior Art--. The specification was objected to because of an editorial error with respect to the reference numerals on Fig. 1. By way of a separate letter attached hereto, applicants propose to amend Fig. 1 to add the label --Prior Art-- and to switch the reference numerals --13-- and --15-- on Fig. 1, to make Fig. 1 consistent with the description in paragraph 2.

Claims 1-9, 13-21, and 25-33 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,557,551 (Craft). Applicants respectfully traverse this rejection for the following reasons.

Each of claims 1, 13, and 25 recite features relating to a calculated temperature estimate. Craft fails to teach or suggest this feature.

The office action relies on col. 2, lines 28-30 and col. 6, lines 53-62 of Craft for allegedly disclosing a controller adapted to calculate a temperature estimate of a device. However, this analysis is incorrect. For the Examiner's convenience, the cited portions are reproduced below:

P15056

3

10/606,514

"This disclosure describes a thermal protection circuit that models thermal characteristics of a circuit and then acts to prevent the circuit from overheating." See Craft, col. 2, lines 28-30.

"1. An apparatus for managing operations of a circuit which executes a sequence of digital instructions, comprising:
means responsive to said sequence of digital instructions to be executed by said circuit for computing predicted cumulative power dissipation to be caused by said sequence of digital instructions by accumulating predetermined thermal load values for said sequence of instructions to be executed;" See Craft, col. 6, lines 53-62.

As is apparent from the foregoing, neither of the cited portions of Craft even mentions a calculated temperature estimate for a device. A model of a thermal characteristic is different from a calculated temperature estimate. A computed cumulative power dissipation is different from a calculated temperature estimate. An accumulated thermal load is different from a calculated temperature estimate.

By way of background, as described extensively in the present specification, some embodiments of the present invention may utilize a calculated temperature estimate to control access to device, as opposed to a simple access request counter. In some cases, using the calculated temperature estimate may provide better performance than conventional systems which limit access requests based on simple counts.

In contrast to the present invention, Craft discloses only the conventional system which tracks the number of accesses to a device and increments or decrements registers based on the number of accesses. For example, see Craft at col. 4, lines 10-29. The value in a thermal register is used to track accesses to a device. The value of the thermal register may be incremented or decremented by some constant value. But the value in the

10/606,514

thermal register is not a calculated temperature estimate. Rather, the value of the thermal register is some nominal integer number corresponding to clock cycles and a number of device operation cycles. For example, in the example given at Craft col. 4, line 57 - col. 5, line 30, "the thermal register should have a maximum value of 65, 536 ..." (see col. 5, lines 18-19).

Applicants are unable to identify any description in Craft which might correspond to a calculated temperature estimate for a device. If the rejection is maintained, Applicants respectfully request that the Examiner identify, with particularity, precisely which register, circuit, or other portion of Craft the Examiner is relying on for identically describing a calculated temperature estimate.

Because, among other things, Craft fails to teach or suggest features relating to a calculated temperature estimate, claims 1, 13, and 25 are not anticipated by and are patentable over Craft. Claims 2-12 depend from claim 1 and are likewise patentable. Claims 14-24 depend from claim 13 and are likewise patentable. Claims 26-36 depend from claim 25 and are likewise patentable.

With respect to claims 2, 14, and 26, for the reasons noted above, Craft does not teach or suggest calculating a temperature estimate at all, let alone in accordance with an access request. Moreover, the access budget in Craft appears to be imposed at all times. In other words, the tracking of access requests and corresponding overhead of incrementing / decrementing counters is ongoing in Craft, not imposed only after some threshold has been exceeded. Accordingly, claims 2, 14, and 26 are separately patentable over Craft.

With respect to claims 3, 15, and 27, for the reasons noted above, Craft does not teach or suggest processing access requests without an access request budget. The office action appears to be misconstruing the limiting of accesses with the budgeting of accesses. Accordingly, claims 3, 15, and 27 are separately patentable over Craft.

10/606,514

With respect to claims 5, 17, and 29, the cited portion of Craft, namely col. 4, line 57 - col. 5, line 30, only describes how to calculate an access budget (e.g. the maximum thermal register value of 65.536) for one illustrative example. However, Craft does not teach or suggest that this maximum threshold value is recalculated each time the budget is imposed. As noted above, Craft describes only that the budget is determined once for a given device and is in place throughout the operation of the device. For the reasons noted above in connection with claims 2, 14, and 26, Craft does not teach or suggest that the budget is imposed only after the temperature estimate exceeds the temperature threshold, and Craft further does not teach or suggest calculating a new access request budget each time the access request budget is imposed. Accordingly, claims 5, 17, and 29 are separately patentable over Craft.

With respect to claims 6, 18, and 30, the office action relies on the same portion of Craft, namely col. 4, line 57 - col. 5, line 30, for allegedly describing that a new access request budget is calculated periodically, without identifying corresponding text or description in Craft which allegedly reads on the claim. Applicants are unable to identify any such teaching or suggestion in the cited portion or elsewhere in Craft. If the rejection is maintained, applicants respectfully request a new, non-final office action in compliance with 37 C.F.R. § 104(c)(2), setting forth the Examiner's position with particularity as to where Craft allegedly describes such periodic calculation of a new access request budget. In the absence of the Examiner setting forth sufficient analysis to establish anticipation, and because Craft fails to teach or suggest that a new access budget is periodically calculated, claims 6, 18, and 30 are not anticipated by and are separately patentable over Craft.

With respect to claims 7, 19, and 31, the office action relies on the same portion of Craft, namely col. 4, line 57 - col. 5, line 30, for allegedly describing that a new access request budget is calculated when a parameter involved in the calculation is updated, without identifying corresponding text or description in Craft which allegedly reads on the claim. Applicants are unable to identify any such teaching or suggestion in the cited portion or elsewhere in Craft. If the rejection is maintained, applicants respectfully

10/606,514

request a new, non-final office action in compliance with 37 C.F.R. § 104(c)(2), setting forth the Examiner's position with particularity as to where Craft allegedly describes such calculation of a new access request budget. In the absence of the Examiner setting forth sufficient analysis to establish anticipation, and because Craft fails to teach or suggest that a new access request budget is calculated when a parameter involved in the calculation is updated, claims 7, 19, and 31 are not anticipated by and are separately patentable over Craft.

With respect to claims 8, 20, and 32, the office action cites col. 1, lines 21-25 of Craft for allegedly disclosing that a new access request budget is calculated when an ambient temperature parameter is updated. However, the cited portion of Craft merely mentions that a high ambient temperature in a computer systems operating environment may lead to cooling problems. The cited portion is simply irrelevant to Craft calculation of an access request budget. Accordingly, claims 8, 20, and 32 are separately patentable over Craft.

With respect to claims 9, 21, and 33, the office action cites col. 6, lines 26-35 for allegedly disclosing a controller adapted to calculate a temperature estimate in accordance with an estimated initial temperature of a device, an estimated equilibrium temperature of the device, and an estimated temperature decay rate for the device. This is simply incorrect. The cited portion merely describes that increased cooling may be utilized as an alternative to decreased device activity, to control the device temperature. The cited portion is devoid of any mention of calculating an estimated temperature, an estimated initial temperature, an estimated equilibrium temperature, or an estimated temperature decay rate. Accordingly, claims 9, 21, and 33 are separately patentable over Craft.

Claims 1-7, 13-19, and 25-31 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,173,217 (Bogin). Applicants respectfully traverse this rejection for the following reasons.

10/606,514

The office action analysis of Bogin fails for many of the same reasons given above in connection with Craft. Primarily, the office action fails to identify any portion of Bogin where a temperature estimate of the device is calculated. Bogin, like Craft, utilizes the conventional access request counting to manage an access budget. In the interest of compact prosecution, an abridged analysis follows.

Each of claims 1, 13, and 25 recite features relating to a calculated temperature estimate. Bogin fails to teach or suggest this feature.

The office action relies on col. 2, lines 18-26 and col. 1, lines 30-39 of Bogin for allegedly disclosing a controller adapted to calculate a temperature estimate of a device. However, this analysis is incorrect.

Col. 2, lines 18-26 of Bogin merely describes that a component has some thermal specification including an approximate temperature where that component may fail. The cited portion mentions controlling an access rate to meet the thermal specification. However, the cited portion does not teach or suggest calculating a temperature estimate for the device.

Col. 1, lines 30-39 merely describes the conventional use of temperature sensors to directly detect a device temperature. However, the cited portion does not teach or suggest calculating a temperature estimate for the device.

Applicants are unable to identify any description in Bogin which might correspond to a calculated temperature estimate for a device. If the rejection is maintained, Applicants respectfully request that the Examiner identify, with particularity, precisely which portion of Bogin the Examiner is relying on for identically describing a calculated temperature estimate.

Because, among other things, Bogin fails to teach or suggest features relating to a calculated temperature estimate, claims 1, 13, and 25 are not anticipated by and are

10/606,514

patentable over Bogin. Claims 2-7 depend from claim 1 and are likewise patentable. Claims 14-19 depend from claim 13 and are likewise patentable. Claims 26-31 depend from claim 25 and are likewise patentable.

The rejection of the dependent claims is likewise incorrect and each of the dependent claims are believed to be separately patentable over Bogin. In the interest of compact prosecution, an abridged analysis follows.

With respect to claims 2, 14, and 26, although element 106 refers to an access request, Bogin does not teach or suggest calculating a temperature estimate in accordance with the element 106. The cited portion of col. 5, line 66 - col. 6, line 12 of Bogin describes throttling times and throttling windows, but does not teach or suggest anything whatsoever in connection with a calculated temperature estimate.

With respect to claims 3, 15, and 27, the cited portion of col. 5, line 66 - col. 6, line 12 of Bogin describes throttling times and throttling windows, but does not teach or suggest anything whatsoever in connection with a calculated temperature estimate.

With respect to claims 4, 16, and 28, the cited portion of col. 5, line 66 - col. 6, line 12 of Bogin describes throttling times and throttling windows, but does not teach or suggest anything whatsoever in connection with a calculated temperature estimate.

With respect to claims 5-7, 17-19, and 29-31, the office action cites Fig. 1B and Fig. 4A, respectively, for allegedly disclosing these claims, without any supporting analysis or statements as to how these figures might read on the claims. Even with reference to the supporting description, it is not apparent to applicants how the Examiner might be applying the reference against the claims. Applicants can find no mention in the cited figures or supporting description of calculating a new access request budget.

If the rejection is maintained, applicants respectfully request a new, non-final office action in compliance with 37 C.F.R. § 104(c)(2), setting forth the Examiner's

10/606,514

position with particularity as to where Bogin allegedly describes such calculation of a new access request budget. In the absence of the Examiner setting forth sufficient analysis to establish anticipation, and because Bogin fails to teach or suggest that a new access request budget is calculated, claims 5-7, 17-19, and 29-31 are not anticipated by and are separately patentable over Bogin.

Claims 1-7, 13-19, and 25-31 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,470,238 (Nizar). Applicants respectfully traverse this rejection for the following reasons.

The office action analysis of Nizar, which is a CIP of Bogin, fails for many of the same reasons given above in connection with Bogin and Craft. Primarily, the office action fails to identify any portion of Nizar where a temperature estimate of the device is calculated. Nizar, like Bogin and Craft, utilizes the conventional access request counting to manage an access budget. In the interest of compact prosecution, an abridged analysis follows.

Each of claims 1, 13, and 25 recite features relating to a calculated temperature estimate. Nizar fails to teach or suggest this feature.

The office action relies on col. 11, line 52 - col. 12, line 2 of Nizar for allegedly disclosing a controller adapted to calculate a temperature estimate of a device. However, this analysis is incorrect.

Col. 11, line 52 - col. 12, line 2 of Nizar merely describes the operation of an I/O counter. The cited portion mentions controlling an access rate when a certain amount of I/O traffic is reached. However, the cited portion does not teach or suggest calculating a temperature estimate for the device.

Applicants are unable to identify any description in Nizar which might correspond to a calculated temperature estimate for a device. If the rejection is maintained,

10/606,514

Applicants respectfully request that the Examiner identify, with particularity, precisely which portion of Nizar the Examiner is relying on for identically describing a calculated temperature estimate.

Because, among other things, Nizar fails to teach or suggest features relating to a calculated temperature estimate, claims 1, 13, and 25 are not anticipated by and are patentable over Nizar. Claims 2-7 depend from claim 1 and are likewise patentable. Claims 14-19 depend from claim 13 and are likewise patentable. Claims 26-31 depend from claim 25 and are likewise patentable.

The rejection of the dependent claims is likewise incorrect and each of the dependent claims is believed to be separately patentable over Nizar. In the interest of compact prosecution, an abridged analysis follows.

With respect to claims 2-7, 14-19, and 26-31, the office action cites various portions or figures of Nizar, for allegedly disclosing these claims, without any supporting analysis or statements as to how the cited portions or figures might read on the claims. Even with reference to the cited portions, it is not apparent to applicants how the Examiner might be applying the reference against the claims.

If the rejection is maintained, applicants respectfully request a new, non-final office action in compliance with 37 C.F.R. § 104(c)(2), setting forth the Examiner's position with particularity as to how the cited portions of Nizar allegedly read on each and every claim recitation of the dependent claims. In the absence of the Examiner setting forth sufficient analysis to establish anticipation, claims 2-7, 14-19, and 26-31 are not anticipated by and are separately patentable over Nizar.

Claims 10-12, 22-24, and 34-36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Craft in view of U.S. Patent No. 6,115,441 (Douglass). Claims 8-12, 20-24 and 32-36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bogin

10/606,514

or Nizar further in view of Douglass. Applicants respectfully traverse these rejections for the following reasons.

Applicants first note that Douglass fails to make up for the above noted deficiencies in Craft, Bogin, and Nizar. Accordingly, no combination of these references establish a prima facie case of obviousness against claims 8-12, 20-24, or 32-26.

Moreover, the rejection is not understood. The office action asserts that Douglass is analogous art, but it is not. Douglass describes a temperature sensor. Each of the primary references, Craft, Bogin, and Nizar, are directed to temperature control of a device without a temperature sensor. In fact, each of the primary references, Craft, Bogin, and Nizar, teach away from the use of temperature sensor for the respective systems described therein.

In any event, the office action misconstrues the Douglass reference. Col. 1, lines 51-61 of Douglass merely describes that accurate temperature information is needed for a variety of control processes. The cited portion does not describe that a new access request budget is calculated when an ambient temperature parameter is updated. Accordingly, the office action fails to establish a prima facie case of obviousness against claim 8.

Col. 34, lines 1-12 of Douglass describes physical devices used to measure the temperature of a device. The cited portion does not describe an estimated initial temperature, an estimated equilibrium temperature, or an estimated temperature decay for a device. Accordingly, the office action fails to establish a prima facie case of obviousness against claim 9.

The office action is completely devoid of any rejection against the recitations of claims 10-12, 22-24, and 34-36. Accordingly, the office action fails to establish a prima facie case of obviousness against these claims.

10/606,514

Because the office action fails to establish a prima facie case of obviousness, claims 8-12, 20-24, and 32-36 are patentable over any of the primary references, Craft, Bogin, or Nizar, in view of Douglass.

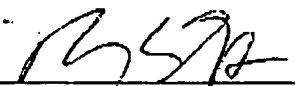
In view of the foregoing, favorable reconsideration and withdrawal of the rejections is respectfully requested. Early notification of the same is earnestly solicited. If there are any questions regarding the present application, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

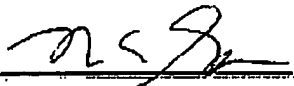
October 14, 2004

Date

Intel Americas, LF3
4030 Lafayette Center Drive
Chantilly, VA 20151


Paul E. Steiner
Reg. No. 41,326
(703) 633 - 6830

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office at (703) 872-9306 on October 14, 2004.

Paul E. Steiner 

Date: October 14, 2004